

Midwest Ag-Focus Climate Outlook

Main Points

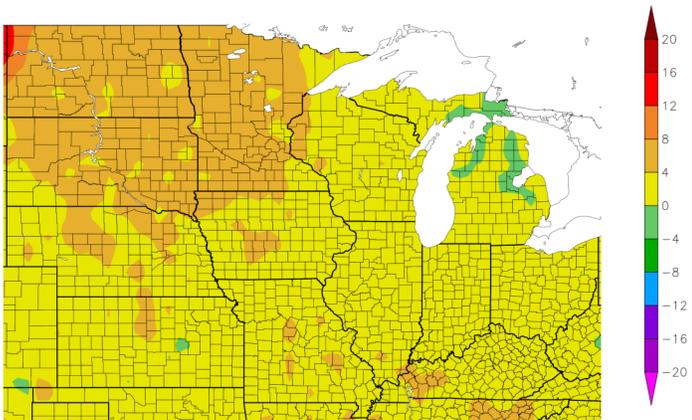


- ◆ The Corn Belt saw record high and low temperatures over the past month, and was severely deprived of precipitation across the region, with a few exceptions.
- ◆ Limited changes in drought status as soil moisture and water cycle movement slows down during the cold season.
- ◆ Corn and soybean harvest is wrapping up, if not already finished, and Christmas tree harvest is in full swing.
- ◆ The next three months reflect an El Niño-esque pattern for the Midwest and Plains, with overall above normal temperatures and below (above) normal precipitation to the north (south).



Current Conditions

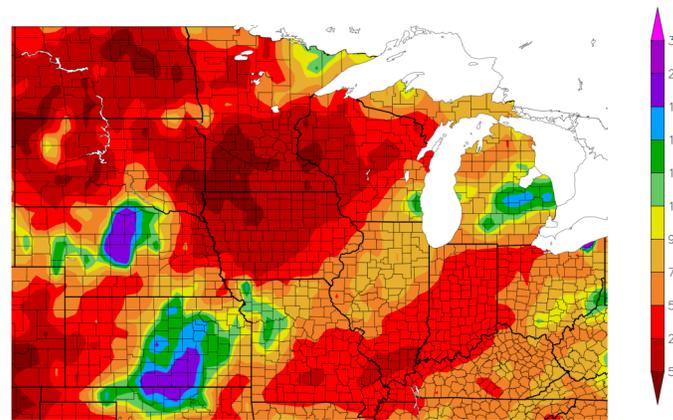
Departure from Normal Temperature (F)
11/6/2023 – 12/5/2023



Generated 12/6/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
11/6/2023 – 12/5/2023



Generated 12/6/2023 at HPRCC using provisional data.

NOAA Regional Climate Centers

Last week's rain hit some of the drier spots in the southeastern area of the Corn Belt, but much of the region is in dire need of precipitation. Over the last 30 days, there were widespread areas where precipitation was less than 50% of normal, with pockets of 5% or less. A few areas saw greater than normal precipitation, namely north central Nebraska and south central Kansas. Southern Minnesota saw some of the most widespread deficits, putting November 2023's statewide average precipitation (~0.38") at the state's 12th driest November on record, according to Minnesota WeatherTalk's Mark Seeley. Included in Kansas's higher-than-normal precipitation was an unforgettable Thanksgiving weekend snowstorm. South central and central Kansas received the highest snowfall totals from this event, where several counties reported over a foot of snow. While November started off chilly after the Halloween cold snap, maximum temperature records were set across the Corn Belt, including Melrose, Minnesota, with a daily record of 63°F on November 16, which was 25°F above normal. These warmer-than-normal conditions lasted until Thanksgiving, when two cold fronts in a four days brought temperatures averaging 10-13°F below normal. Midland, Michigan, saw 13°F on November 28, tying for the coldest on record.

Images from High Plains Regional Climate Center (HPRCC), Online Data Services: [ACIS Climate Maps](https://www.climatehubs.usda.gov/hubs/midwest). Generated: 12/6/2023.



Impacts

Drought

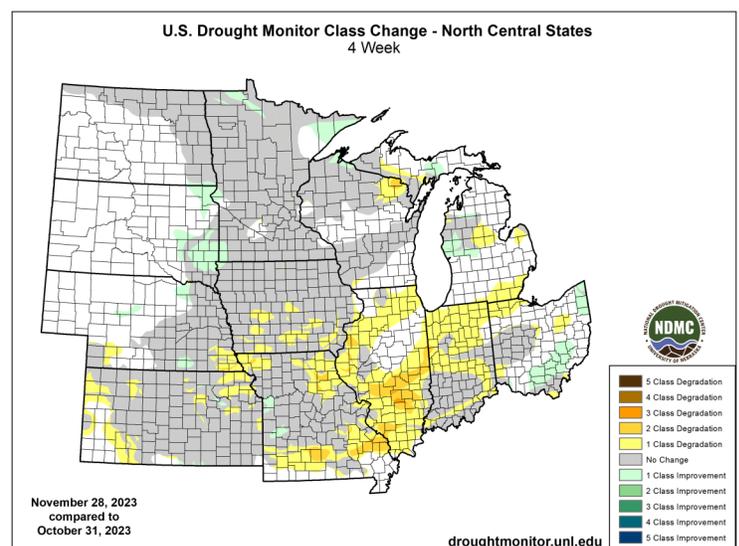
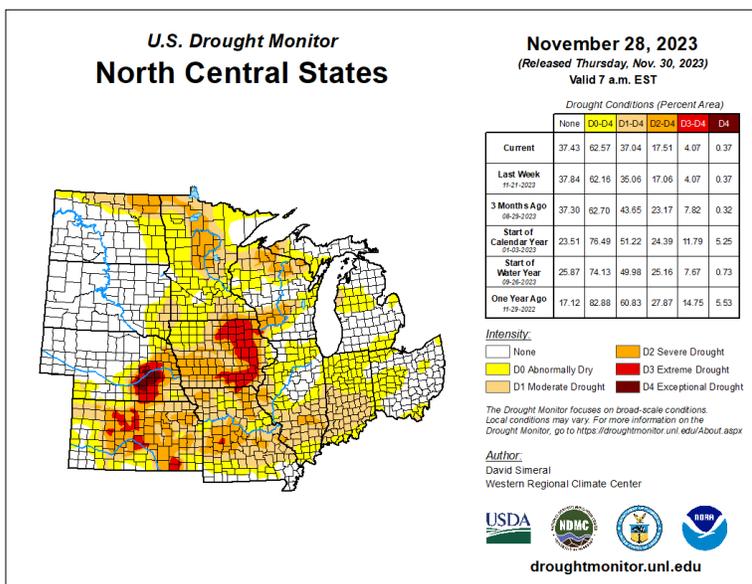
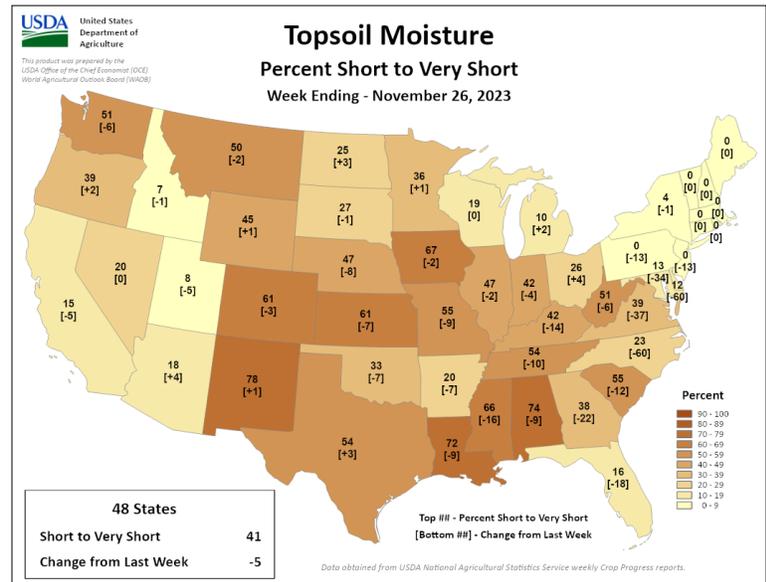
With the lack of precipitation over the last month, drought status has not budged for many states in the north central region. Much of the southern region has experienced 1- to 2-class degradations, and a few small areas have seen a 1-class improvement. Unfortunately, the heaviest pocket of precipitation in north central Nebraska did not reach the exceptional drought that remains prevalent in southeastern Nebraska, and less than an inch fell over the extreme drought that has persisted over eastern Iowa since September.

Soil Moisture

With the lack of precipitation this past month, soil moisture continues to suffer immensely across several states. The amount of topsoil moisture varies for the north central US: 10% of Michigan's area is short or very short on moisture, whereas 67% of Iowa is short or very short. Subsoil moisture is even more deprived, with Michigan at 29% and Iowa and Kansas both at 73% of their areas at short or very short on moisture. These values are reflected in modeled soil moisture, which show that a majority of Iowa, the northwestern half of Wisconsin, upper Michigan, and parts of Ohio, Indiana, and Illinois with the worst of the dryness at 10 cm. In the top 100 cm, widespread dryness shows up across a majority of the 8 Midwestern states as well as Kansas and Kentucky. On the flip side, the northwestern corner of the Corn Belt (i.e., the Dakotas and northwestern Iowa) are not showing as much soil moisture deprivation. Nonetheless, winter precipitation will be crucial for replenishing soil moisture and supporting the 2024 growing season.

Soil Temperature

Averaged over November 27 to December 3, four-inch soil temperatures range from 25-35°F in North Dakota and northern Minnesota to 40-50°F in southern Missouri, Illinois, Indiana, and northern Kentucky. When soils are frozen, changes in soil moisture are limited until the spring thaw begins. However, unfrozen soils should see changes—continued drying or improvement—at the surface. Additionally, because soils in the far southern region are still hovering around the 50°F threshold, those in this area should be sure to continue to check soil temperatures to support management decisions, such as nutrient application.



Maps Generated by the [United States Department of Agriculture](https://www.usda.gov/) and the [National Drought Mitigation Center](https://www.ndmc.gov/).

Crops

Overall, the 2023 harvest season ran relatively smoothly owing to minimal weather-related interruptions. As of November 26, the Corn Belt was wrapping up harvest with the 2023 US average corn yield at approximately 174.9 bushels per acre and soybeans at 49.9 bushels per acre. For those who planted winter wheat, the north central region is averaging 95% emerged. Additionally, the lack of forage issues will probably stick in some areas with conditions looking to be much of the same. With just under three weeks until Christmas, Christmas tree harvest is in full swing. With November's temperatures being overall so warm, there could be some concern for needle set. However, the recent colder conditions may provide certain species with the temperatures needed for retention.

Livestock

Overall, the lack of cold and major snows along with drier soils may have made management easier, but dust may be an issue in places. As winter nears, ensuring livestock buildings are receiving optimal ventilation while maintaining a comfortable temperature is crucial in maintaining healthy livestock.

Fire

The National Interagency Fire Center categorizes the Corn Belt as having a normal fire potential for December through February, particularly with dry conditions and lack of snow.

Water

Throughout the past month, the Mississippi River levels have fluctuated from decreasing to increasing, but are now back on the decline. As of December 5, the Mississippi at Memphis is down to 7.5 feet below low stage and there are several areas with exposed shoreline. Because the peak shipping season has come and gone, there will likely be reductions in the Missouri River flow due to releases from the dams. Unfortunately, this, combined with the prolonged dryness, will hurt the Mississippi flow. However, the USACE is expected to keep ships moving when possible.

Additionally, municipalities have been dealing with limited urban water supply, such as in Osceola, Iowa, which could trickle into rural limitations.

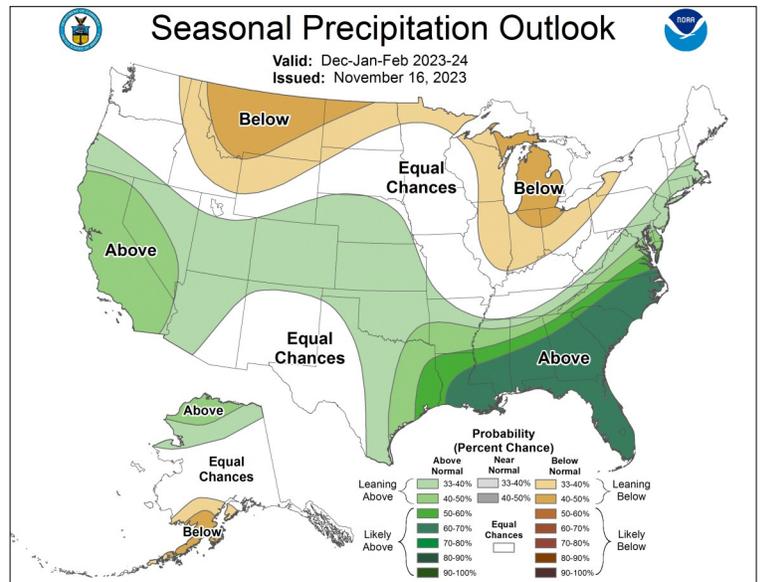
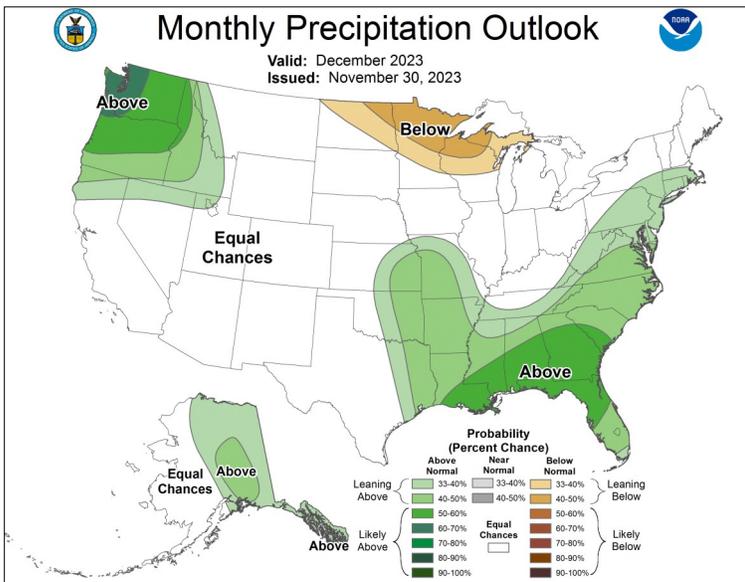
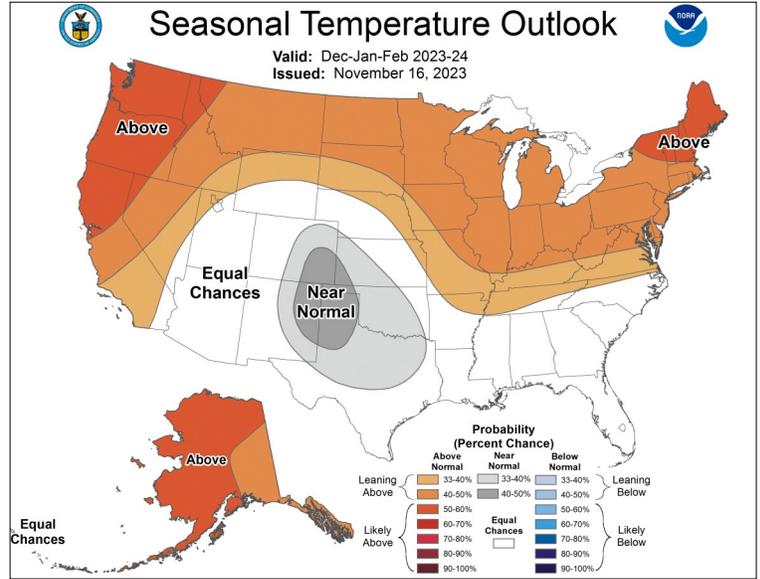
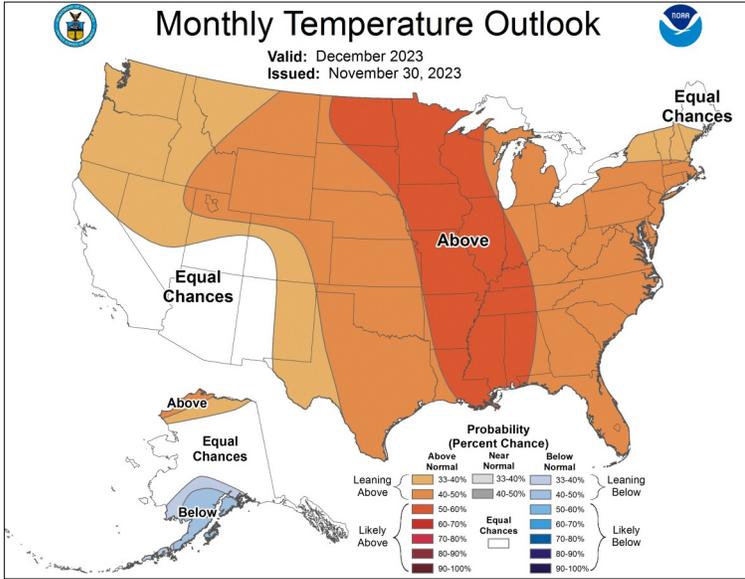
Outlook



In the near term, there is the potential for several low-pressure systems to bring much-needed precipitation to the central US, particularly the southeastern area of the region. Temperatures look to be near normal for the next week or so in the heart of the Midwest, with the potential for above normal temperatures in the Plains. The 8- to 14-day outlook shows that temperatures are leaning above-normal for the north central US, while precipitation may be below normal for much of the region, with chances for near- to above-normal precipitation for parts of the southwestern Corn Belt.

As El Niño builds towards its peak strength, the monthly and season outlooks reflect a typical El Niño winter season, with temperatures looking to be above normal and precipitation leaning below normal to the north and above normal to the south. Climatologically, most of our region expects less snow overall during El Niño events, but when precipitation falls, it is typically later in the winter. Drought will likely persist, as the precipitation the region is forecasted to receive in the near-term will not be plentiful enough to make significant improvements. Still, subseasonal events can bring changes in precipitation patterns.

Looking ahead, El Niño is anticipated to stick with us through the spring, with a 62% chance during April, May, and June of 2024.



Outlooks provided by the [Climate Prediction Center](#).

Partners and Contributors



- [United States Department of Agriculture \(USDA\)](#)
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- [Climate Prediction Center \(CPC\)](#)
- [National Weather Service \(NWS\)](#)
- [National Center for Environmental Information \(NCEI\)](#)

- [National Drought Mitigation Center \(NDMC\)](#)
- [National Integrated Drought Information System \(NIDIS\)](#)
- [Midwestern Regional Climate Center \(MRCC\)](#)
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